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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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APPLICANT(S): Xiaodong Huang, Andreas Stintz, Kevin Malloy, Guangtian Liu,
Luke Lester and Julian Cheng

APPLICATION NO.: 10/087,408

FILING DATE: March 1, 2002

TITLE: Quantum Dot Vertical Cavity Surface Emitting Laser

EXAMINER: James W. Davie

GROUP ART UNIT: 2828

ATTY. DKT. NO.: 22920-06460

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CERTIFICATE OF MAILING

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Dated: June 11, 2003

By:

Signature of Michael W. Farn
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THIRD INFORMATION DISCLOSURE STATEMENT
Under 37 CFR §§ 1.56 and 1.97-98

SIR:

Pursuant to the provisions of 37 CFR §§ 1.56 and 1.97-98, enclosed herewith is modified form PTO/SB/08A listing references for consideration by the Examiner. Enclosed is a copy of each listed reference that may be material to the examination of this application, and for which there may be a duty to disclose.

The filing of this Information Disclosure Statement shall not be construed as a representation regarding the completeness of the list of references, or that inclusion of a reference in this list is an admission that it is prior art or is pertinent to this application, or that a search has been made, or as an admission that the information listed is, or may be considered to be, material to patentability, or that no other material information exists, and shall not be construed as an admission against interest in any manner.

This Information Disclosure Statement is being filed:

- ☒ within three months of the filing date of the application, or date of entry into the national stage of an international application, or before the mailing date of a first office action on the merits, whichever event last occurred;

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- ☐ before the mailing of a first official action after the filing of a request for continued examination (RCE) under 37 CFR § 1.114;
- ☐ after three months of the filing date of this national application or the date of entry of the national stage in an international application, or after the mailing date of the first official action on the merits, whichever event last occurred, but before the mailing date of the first to occur of either: (1) a final action under 37 CFR § 1.113; or (2) an action that otherwise closes prosecution in the application, and:
 - ☐ attached hereto is the fee set forth under 37 CFR § 1.17(p) for submission of this Information Disclosure Statement under 37 CFR § 1.97(c); OR
 - ☐ Applicant certifies pursuant to 37 CFR § 1.97(e) that:
 - ☐ each item of information contained in this Information Disclosure Statement was first cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Statement; OR
 - ☐ no item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of the person signing this certification after making reasonable inquiry, no item of information contained in this Statement was known to any individual designated under 37 CFR § 1.56(c) more than three months prior to the filing of this Statement;
- ☐ on or before the payment of the issue fee but after the mailing date of the first to occur of either: (1) a final action under 37 CFR § 1.113; (2) a notice of allowance under 37 CFR § 1.311; or (3) an action that otherwise closes prosecution in the application, and:
 - ☐ Applicant certifies pursuant to 37 CFR § 1.97(e) that:
 - ☐ each item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Statement; or
 - ☐ no item of information contained in this Information Disclosure Statement was cited in a communication from a

foreign patent office in a counterpart foreign application and, to the knowledge of the person signing this certification after making reasonable inquiry, no item of information contained in this Statement was known to any individual designated under 37 CFR § 1.56(c) more than three months prior to the filing of this Statement; AND

- ☐ attached hereto is the fee set forth under 37 CFR §1.17(p) for submission of this Information Disclosure Statement under 37 CFR. § 1.97(c); OR
- ☐ after the payment of the issue fee. Applicant requests that the information contained in this Information Disclosure Statement be placed in the file according to 37 CFR § 1.97(i), although the information may not be considered by the USPTO.
- ☐ This application relies, under 35 U.S.C. § 120, on the earlier filing date of prior application No.[APPLICATION NUMBER], filed on [FILING DATE], and the references cited therein are hereby referenced, but are not required to be provided in this application under 37 CFR § 1.98(d).
- ☒ Each item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart application, and the communication was not received by any individual designated in 37 CFR § 1.56(c) more than thirty days prior to the filing of this Information Disclosure Statement. 37 CFR § 1.704(d).
- ☒ Applicant submits that no fee is required for the consideration of this Information Disclosure Statement.

Consideration of the listed references and favorable action are solicited.

Respectfully submitted,
XIAODONG HUANG et al.

Dated: June 11, 2003

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Substitute for form 1449A/PTO

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Complete if Known

Application No.	10/087,408
Filing Date	March 1, 2002
First Named Inventor	Xiaodong Huang
Art Unit	2828
Examiner Name	James W. Davie
Attorney Docket Number	22920-06460

Sheet 1 of 2

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document No. Number – Kind Code ² (if known)	Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
	1	US-5,781,575 A	07-14-1998	Nilsson
	2	US-5,930,278 A	07-27-1999	Menigaux

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document Country Code ³ – Number ⁴ Kind Code ⁵ (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	T ⁶

OTHER REFERENCES – NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ⁶
	3	Bloch, J. et al., "Room-temperature 1.3 μ m emission from InAs quantum dots grown by metal organic chemical vapor deposition," <i>Applied Physics Letters</i> , American Institute of Physics, New York, U.S., Vol. 75, No. 15, October 11, 1999, pages 2199-2201.	
	4	Evans, P.W. et al., "Edge-emitting quantum well heterostructure laser diodes with auxiliary native-oxide vertical cavity confinement," <i>Applied Physics Letters</i> , American Institute of Physics, New York, U.S., Vol. 67, No. 21, November 20, 1995, pages 3168-3170.	
	5	Garcia, J.M. et al., "Electronic states tuning of InAs self-assembled quantum dots," <i>Applied Physics Letters</i> , American Institute of Physics, New York, U.S., Vol. 72, No. 24, June 15, 1998, pages 3172-3174.	
	6	Kim, Jin K. et al., "Lateral Carrier Confinement in Miniature Lasers Using Quantum Dots," <i>IEEE Journal of Selected Topics in Quantum Electronics</i> , IEEE Service Center, U.S., Vol. 6, No. 3, May/June 2000, pages 504-510.	
	7	Ledentsov N.N. et al., "Interconnection between gain spectrum and cavity mode in a quantum-dot vertical-cavity laser," <i>Semiconductor Science and Technology</i> , Institute of Physics, London, G.B., Vol. 14, No. 1, 1999, pages 99-102.	

Examiner Signature		Date Considered	
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609.

Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹Applicant's unique citation designation number (optional). ²See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶Applicant is to place a check mark here if English language Translation is attached.

22920/06460/DOCS/1354841.1



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PTO/SB/08A (10-01)

Approved for use through 10/31/2002. OMB 0651-0031
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT				Substitute for form 1449A/PTO	
				Complete if Known	
				Application No.	10/087,408
				Filing Date	March 1, 2002
				First Named Inventor	Xiaodong Huang
				Art Unit	2828
Examiner Name	James W. Davie				
Sheet	2	of	2	Attorney Docket Number	22920-06460

OTHER REFERENCES – NON-PATENT LITERATURE DOCUMENTS				
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ⁶	
	8	Park, Gyoungwon et al., "Temperature Dependence of Gain Saturation in Multilevel Quantum Dot Lasers," <i>IEEE Journal of Quantum Electronics</i> , IEEE Inc., New York, U.S., Vol. 36, No. 9, September 2000, pages 1065-1071.		
	9	Saito, Hideaki et al., "Controlling polarization of quantum-dot surface-emitting lasers by using structurally anisotropic self-assembled dots," <i>Applied Physics Letters</i> , American Institute of Physics, New York, U.S., Vol. 71, No. 5, August 4, 1997, pages 590-592.		
	10	Schur, Richard et al., "Vertical Microcavity Lasers with InGaAs/GaAs Quantum Dots Formed by Spinodal Phase Separation," <i>Japanese Journal of Applied Physics</i> , Tokyo, Japan, Vol. 36, No. 3B, March 15, 1997, pages 357-360.		
	11	Shchekin, Oleg B. et al., "Low-Threshold Continuous-Wave Two-Stack Quantum-Dot Laser with Reduced Temperature Sensitivity," <i>IEEE Photonics Technology Letters</i> , IEEE Inc., New York, U.S., Vol. 12, No. 9, September 2000, pages 1120-1122.		
	12	Ustinov, V.M. et al., "High output power CW operation of a quantum dot laser," <i>Compound Semiconductors 1999</i> , Proceedings of the 26 th International Symposium on Compound Semiconductors, Berlin, Germany, August 22-26, 1999, Institute of Physics Conference Series, IOP Publishing Ltd., London, G.B., No. 166, pages 277-280.		
	13	PCT International Search Report, International Application No. PCT/US01/31256, May 27, 2003, 7 pages.		
	14	PCT International Search Report, International Application No. PCT/US02/06221, May 27, 2003, 4 pages.		

Examiner Signature		Date Considered	
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